

This study was carried out to measure pain sensitivity and response during nursing care, and to clarify the relationship between pain sensitivity and response. Seventeen healthy female students consented to participate in the experiment. The subjects, supine on beds, were attached to devices for recording electrocardiograms (ECG), local sweat volumes and skin temperatures. Hot compresses, music therapy, massage and association games were used as nursing cares in this study. RR intervals on the ECG and sweat volumes were analysed during nursing care, with and without electrical stimulation. Experimental pain was evoked in the left anterior cubital region by an electric stimulator. The stimulus intensity was set at 60 ~ 70 on the Visual Analogue Scale of pain (VAS). The subjects assessed the amount of pain experienced using the VAS. This study confirmed that both sweat volume and RR interval changed when the pain stimulus was applied and that there was little adaptation to the pain. Also, it is clear that human interaction during nursing care, such as massage and association game, is an important factor for analgesia.

Kiyoko FUKAI, Kazumi ONO, Miho TANAKA, Keiko SEKIDO and Akiko NIIMI : Differences in Pain Sensitivity and Response According to the Sex of the Subject and the Relationship Between Subject and Investigator

The aim of this study was to clarify whether pain sensitivity, pain response and the analgesic effects of nursing care vary with human relationships and sex differences. Thirty healthy students, seven females who were known to the investigators (A), twelve females (B) and eleven males (C) that the investigators met for the first time, consented to participate in the experiment. A were students in the same department as the investigators, and B and C were students from another department. Hot and cold compresses, music therapy, massage and association games were used as nursing cares in this study. Subjects, supine on beds, were attached to devices for recording electrocardiograms (ECG), local sweat volumes and skin temperatures. The stimulus intensity was set at 70 ~ 80 on the Visual Analogue Scale of pain (VAS). The following conclusions were drawn : the pain tolerance threshold is higher in males than females, both pain sensitivity and response are related to body fat in males, and the analgesic effect of each care depends on the human relationship between subject and investigator.

Teruo TAKAHASHI and Satoru KASENO : Measuring Erythrocyte Sedimentation Rate by Application of an Aggregation and Sedimentation Model

The erythrocyte sedimentation rate is a useful qualitative index in various clinical cases. As the mechanism of erythrocyte sedimentation is multifaceted, many experimental and theoretical investigations have been done. Despite the large number of models developed in previous studies, no model has proven to be a comprehensive solution. In this paper a new aggregation and sedimentation model is proposed. The model utilizes underlying Stokes' equa-

tion that describes the sedimentation velocity of single rigid particle. It involves the use of some formulas obtained experimentally in previous investigations and describes a mechanism of erythrocyte sedimentation that consists of aggregation of erythrocytes, sedimentation of aggregates and packing of erythrocytes. The prediction of the erythrocyte sedimentation curve and sedimentation rate is made possible by inserting hematocrit, hemoglobin and some plasma protein concentration values into the equations of the model. A good agreement between the observed and predicted values was obtained.

Kazuo TANIGUCHI, Keizo KADONO, Hiroshi NAKAMURA, Masahiko HIRATA, Mantaro HIGUCHI, Hiromichi YAMAMOTO, Yukimasa NAKASHIMA, Tadao FUJIWARA and Satoshi UEDA :
A Study of the Average Length of Stay of Patients in a Regional Hospital

An analysis of the length of stay of patients in the hospital may be important to the hospital administration in the preparation of diagnostic and nursing plans. In addition, the average length of stay of a patient may often be used as an index of the characteristics of a hospital.

Therefore, the average length of stay of patients discharged from a regional hospital during the last 14 years, was determined and analyzed statistically. Our findings showed that the distribution was not normal but was long and wide. Presented as a logarithm, the results were consistent with a lognormal distribution.

However, in order to determine the reasonableness of diagnostic plans, a better grasp of the characteristics of the diagnostics and effective sickbed utilization as an index of proper hospital administration is necessary. This would require further investigation.

Masaaki TANAKA : Fractals in Biological Rhythms and $1/f$ fluctuations

Recently, many researchers have investigated the fluctuations in biological rhythms, such as the normal cardiac sinus interbeat. Normally, such a rhythm is considered to be regular and rather periodic in young and healthy people, and then becomes irregular with aging or disease. Recent studies, however, have revealed that this is not the case and that the fluctuations play a significant role in regulating and maintaining the organism. The origin of these fluctuation is discussed from the viewpoint of fractal natures in biological organs.

Yoshimi HORI and Seizaburo ARITA : Application of Fuzzy Theory to the Diagnosis of Surgical Site Infection

It is important to prevent surgical site infections after gastrointestinal operations. Therefore